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REMARKS/ARGUMENTS

Applicant appreciates the thorough examination of the present application, as evidenced by the first Official Action. The first Official Action objects to Claims 1, 11 and 21 as including informalities, namely, including overuse of the phrase "at least one." The Official Action also rejects Claim 6 under 35 U.S.C. § 112, second paragraph, for being indefinite as Claim 6 appears to be missing a word or other linking words. In addition, the Official Action rejects Claims 1-3, 5, 7-13, 15 and 17-21 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,937,768 to Carver et al., and rejects Claim 16 under 35 U.S.C. § 103(a) as being unpatentable over the Carver patent. Further, the Official Action rejects Claims 4 and 14 under 35 U.S.C. § 103(a) as being unpatentable over the Carver patent, in view of U.S. Patent No. 5,460,758 to Langer et al.

In response to the first Official Action, Applicant has amended the specification of the present application to remove an inadvertent typographical error, and amended dependent Claim 16 to properly depend from dependent Claim 15. Applicant has also amended all of the claims, namely Claims 1-21, to remove the "at least one" phraseology with respect to the component(s) of an assembly, the actual model(s) representative of the component(s) and the authority model(s) of the component(s). By such amendments, Applicant respectfully submits that the objection to independent Claims 1, 11 and 21 is overcome.

Applicant has also amended dependent Claim 6 to recite "a temperature of the component and a temperature of the local environment of the component." Applicant therefore respectfully submits that dependent Claim 6 is definite, and as such, the rejection of dependent Claim 6 under 35 U.S.C. § 112, second paragraph, is overcome.

As explained below, however, Applicant respectfully submits that the claimed invention is patentably distinct from the Carver patent and the Langer patent, taken individually or in combination. As such, Applicant has not amended any of the claims in view of either the Carver patent or the Langer patent, and respectfully traverses the rejections of such claims as being anticipated by, or unpatentable over, the Carver patent and/or Langer patent. In view of the amendments to the specification and the claims, and the remarks presented herein, Applicant

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respectfully requests reconsideration and allowance of all of the claims of the present application.

As indicated above, the Official Action rejects independent Claim 1 as being anticipated by the Carver patent. The Carver patent provides an integrated assembly system and method. As disclosed, a data model of an article is generated to replace a conventional hard master tool that typically includes a family of full scale mock-ups or master models of major components of the article and tools used to fabricate those components. In this regard, the data model can include three-dimensional definitions of the article (e.g., virtual aircraft 154) and its components, as well as the tools (e.g., virtual tools 156) and their components (e.g., virtual component parts 158). In operation, the virtual parts of the tool are constructed by an emulating means to form corresponding actual tangible parts (160) that can be thereafter used to form corresponding tools, the tools being used to form an image copy or a complementary image copy of at least a portion of the article. The system and method can also include a computer-aided theodolite system (170) that can translate coordinate points on virtual parts or tools to coordinating points on the corresponding actual parts or tools.

As amended, independent Claim 1 provides a method of producing an assembly comprising at least one component. The method includes mapping the component and thereafter electronically displaying a three-dimensional actual model representative of the component based upon the mapping. The actual model is then compared to an electronic display of a three-dimensional authority model, and a position of the actual model and/or the authority model is altered based upon the comparison such that the authority model and the actual model at least partially align. Next, a machine operation is performed on the component based upon the altered position of the actual model and/or the authority model. And as the position of the actual model and/or the authority model is altered and the machine operation is performed, the actual model is dynamically displayed such that the actual model is automatically and repeatedly updated.

In contrast to the method of amended independent Claim 1, the Carver patent does not teach or suggest mapping a component and thereafter electronically displaying a three-dimensional actual model representative of the component based upon the mapping. As indicated above, the Carver patent discloses a data model of an article that can include three-

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dimensional definitions of the article (e.g., virtual aircraft 154) and its components, as well as the tools (e.g., virtual tools 156) and their components (e.g., virtual component parts 158). The Carver patent does not teach or suggest, however, that the three-dimensional definitions of the article, the tools or their respective components are displayed, or even generated, based upon a mapping of the respective components. The Carver patent also discloses a computer-aided theodolite system (170) that can measure points on actual parts or tools to translate those measured points to coordinate points of the corresponding virtual parts or tools. But even in translating coordinate points, the Carver patent does not teach or suggest that the theodolite system maps the article, tools or their respective components. In addition, the Carver patent does not teach or suggest electrically displaying a three-dimensional actual model representative of the mapped articles, tools or components based upon a mapping of the articles, tools or components, or even based upon the points measured by the theodolite system.

In further contrast to the method of amended independent Claim 1, as the Carver patent does not teach or suggest mapping the component and thereafter displaying an actual model representative of the component, the Carver patent likewise does not teach or suggest dynamically displaying the actual model as the position of the actual model and/or an authority model is altered and a machine operation is performed, the actual model being dynamically displayed such that the actual model is automatically and repeatedly updated. Even if it could somehow be suggested that the points measured by the theodolite system correspond to a mapping of the component to an actual model, however, the Carver patent does not teach or suggest displaying the actual model, much less dynamically displaying the actual model such that the actual model is automatically and repeatedly updated as the position of the actual model and/or authority model is altered and a machine operation is performed, as also recited by amended independent Claim 1. In this regard, even in the case of measuring points on the actual parts or tools to translate those points to coordinate points of the corresponding virtual parts or tools, the Carver patent does not teach or suggest that the measured points are updated as a position of the actual parts or tools and/or a position of the virtual parts or tools are altered and a machine operation is performed.

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Applicant therefore respectfully submits that the method of independent Claim 1 is patentably distinct from the Carver patent. Applicant also respectfully submits that the system and method of amended independent Claims 11 and 21 recite subject matter similar to that of amended independent Claim 1. In this regard, amended independent Claims 11 and 21 recite mapping the component (e.g., by a metrology device) and electronically displaying a three-dimensional actual model representative of the component based upon the mapping of the component (e.g., by a workstation processing element). In addition, amended independent Claim 11 recites dynamically displaying the actual model as the position of the actual model and/or the authority model is altered, and as the numerical control apparatus performs the machine operation, such that the electronic display of the actual model is automatically and repeatedly updated as the position is altered and the machine operation is performed. Amended independent Claim 21, on the other hand, further recites automatically and repeatedly comparing the actual model and the authority model as the machine operation is performed. Thus, Applicant respectfully submits that the rejection of amended independent Claims 1, 11 and 21, and by dependency Claims 2, 3, 5, 7-10, 12, 13, 15, 16 and 17-20, as being anticipated by or being unpatentable over the Carver patent, is overcome.

The Official Action also rejected Claims 4 and 14 as being unpatentable over the Carver patent in view of the Langer patent. The Langer patent discloses a method and apparatus for producing a three-dimensional object. As disclosed, the Langer method and apparatus model an object using stereolithography, which as is well known to those skilled in the art, refers to the creation of a 3D solid object from a computer-aided design (CAD) model. Like the Carver patent, and in contrast to the method and system of amended independent Claims 1 and 11, the Langer patent does not teach or suggest mapping a component and thereafter electronically displaying a three-dimensional actual model representative of the component based upon the mapping. Likewise, the Langer patent does not teach or suggest dynamically displaying the actual model as the position of the actual model and/or an authority model is altered and a machine operation is performed, the actual model being dynamically displayed such that the actual model is automatically and repeatedly updated, as is also recited by the method and system of amended independent Claims 1 and 11.

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As neither the Carver patent nor the Langer patent teach or suggest features of the method and system of amended independent Claims 1 and 11, and by dependency Claims 4 and 14, the combination of the Carver patent and the Langer patent likewise does not teach or suggest those features. Applicant therefore respectfully submits that the method and system of dependent Claims 4 and 14 are patentably distinct from the Carver patent and the Langer patent, taken individually or in combination, for at least the reasons given above for amended independent Claims 1 and 11. As such, Applicant respectfully submits that the rejection of dependent Claims 4 and 14 as being unpatentable over the Carver patent in view of the Langer patent is overcome.

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CONCLUSION

In view of the amendments to the specification and the claims, and the remarks presented above, Applicant respectfully submits that the present application is in condition for allowance. As such, the issuance of a Notice of Allowance is therefore respectfully requested. In order to expedite the examination of the present application, the Examiner is encouraged to contact Applicant's undersigned attorney in order to resolve any remaining issues.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

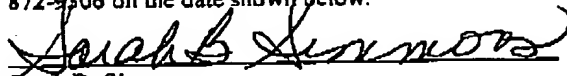



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